

Reality of virus infections in banana and plantain in Democratic Republic of Congo

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Viral diseases of banana are one of the major constraints to the production and distribution of germoplasm of banana in the world. To date, six viruses have been listed on banana: *Banana bunchy top virus* (BBTV), *Banana streak virus* (BSV), *Banana bract mosaic virus* (BBrMV), *Cucumber mosaic virus* (CMV), *Banana mild mosaic virus* (BMMV), *Banana virus x* (BVX).

In Democratic Republic of Congo (DRC), the first viral disease of banana was found, for the first time, in 1950 in Yangambi, Kisangani region. To date, the distribution of BBTV remains mostly unknown and other banana viruses (BSV, CMV, BBrMV, BMMV, BVX) have not yet been reported.

With the aim to describe and establish the frequency of the viruses involved to major viral diseases on banana (*Banana bunchy top virus*, *Banana streak virus*, *Banana bract mosaic virus*, *Cucumber mosaic virus*) in the Democratic Republic of Congo, epidemiological surveys were conducted in 2011, 2012 and 2013 in the South West of the Democratic Republic of Congo. For BBTV at least 216 samples were collected in 2011 and 2012, for BS, CMV, BBrMV and 450 samples were collected and 306 samples were analyzed using PCR, IC - PCR, IC-One-step-RT-PCR and RT - PCR techniques to detect respectively BBTV, BSV, CMV, and BBrMV.

Results indicate that *Banana bunchy top virus* is the most prevalent virus of banana, in South Western of Democratic Republic of Congo (frequency = 44,6%). The highest frequency was observed in Bas Congo province of Bas Congo with a frequency of 17.8% in contrast, the lowest frequency was observed in Katanga province. *Banana streak virus* exists in natural condition and express symptoms of *Banana streak disease*. The most widespread BSV specie is Goldfinger (BSGFV) with a frequency of 64%. This study reveals that there is a transmission of *Banana streak virus* from banana containing genome B with eBSV integration to *Musa acuminata* strict, without integrated sequences. Furthermore, the frequency of vector is 9.3%. These results suggest an emergence of Banana streak disease in the study area. Analysis of the frequency of the *Cucumber mosaic virus* shows that the virus is widespread in all types of cropping systems including vegetables spaces whose N'Djili brasserie, Kimpoko and Kisantu. Very surprisingly CMV is missing from Mbanzangungu one of the largest vegetable crop production site. Performant analyses for the detection of *Banana bract mosaic virus* have proved negative. These results suggest that the BBrMV remains absent from the study area.